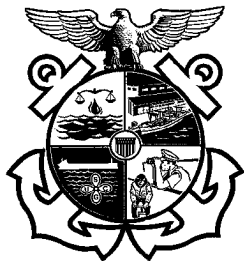


United States Coast Guard



***MACHINERY
INSPECTION BOOK***

Name of Vessel	
Official Number	Class
Date Completed	
Location	
Vessel Built in Compliance with SOLAS: 60 74 74/78 NA	
Inspection Type	
Inspection for Certification (COI)	Reinspection <input type="radio"/> Mid-Period <input type="radio"/> Other <input type="radio"/> First <input type="radio"/> Second <input type="radio"/> Third
	<input type="radio"/> Passenger vessels only
Inspectors	
1. _____	3. _____
2. _____	4. _____

Total Time Spent Per Activity:

Regular Personnel (Active Duty)			
ACTIVITY TYPE	ACTIVITY	TRAINING	(PERS) MI

TOTAL ADMIN HOURS	TOTAL TRAVEL HOURS
-------------------	--------------------

Reserve Personnel			
ACTIVITY TYPE	ACTIVITY	TRAINING	(PERS) MI

TOTAL ADMIN HOURS	TOTAL TRAVEL HOURS
-------------------	--------------------

Auxiliary Resources	
TOTAL BOAT HOURS	TOTAL AIRCRAFT HOURS

Use of Machinery Inspection Book:

This inspection book is intended to be used as a job aid by Coast Guard marine inspectors during machinery inspections of U.S. flagged vessels. The lists contained within this book are not intended to limit the inspection. Each marine inspector should determine the depth of inspection necessary. A checked box should be a running record of what has been inspected. It does not imply that the entire system has been inspected or that all or any items are in full compliance. This job aid does not constitute part of the official inspection record.

This document does not establish or change Federal laws or regulations. References given are only general guides. Refer to IMO publications, CFR's, NVIC's, or any locally produced cite guides for specific regulatory references. Not all items in this book are applicable to all vessels or types of propulsion systems.

NOTE: *Guidance on how to conduct machinery inspections of U.S. flagged vessels can be found in Marine Safety Manual (MSM) Volume II, Chapter 6: Inspection of Vessels for Certification. All MSM cites listed in this book refer to MSM Volume II unless otherwise indicated.*

Pre-inspection Items:

- Review MSIS records.
 - MIPIP
 - MICOI
- Obtain copies of forms to be issued.

Post-inspection Items:

- Issue letters/certificates to vessel.
- Complete MSIS entries.
 - MIAR
 - MSDS
 - MIDR
 - VFLD
 - VFID
- Initiate Report of Violation (ROV) if necessary.

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Boilers:

- | Boiler ID Number | Date Hydrostatically Tested | Date Mountings Opened | Date Mountings Removed and Studs Examined | <i>Fireside</i> | <i>Waterside</i> | <i>External</i> |
|------------------|-----------------------------|-----------------------|---|-----------------|------------------|-----------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Notes: _____

Testing of Boiler Safety Valve

46 CFR 52.01-120

Step	Action	D/S	S/S	S/P
1	Determine MAWP of boiler. _____ psi			
2	Record pressure setting stamped on each valve.	_____ psi	_____ psi	_____ psi
3	Observe opening and closing of valves and record lift and seating pressures of each valve. <div style="margin-left: 20px;"> 3a. Lift pressure 3b. Seating pressure </div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>
<p>WARNING: NEVER allow test pressure to be greater than MAWP during test. If lift pressure is above MAWP, the valve must be adjusted or replaced before test continues.</p> <p>NOTE: Safety valves must be tested in highest-to-lowest pressure order; typically D/S-S/S-S/P. This avoids the risk of damaging a valve or changing its setting by placing a gag on it after it has been tested.</p>				
4	Ensure Step 3 pressures are within acceptable limits ($\pm 5\%$) of stamped pressure. Use the following calculations. <div style="margin-left: 20px;"> 4a. Step 2 (stamped pressure) x .05 4b. Step 2 (stamped pressure) – 4a (-5%) 4c. Step 2 (stamped pressure) + 4a (+5%) </div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>
<p>IMPORTANT: Step 3 (lift pressure) must be between pressures recorded in 4b and 4c. If NOT, safety valve lift pressure MUST be adjusted within specified limits.</p>				
5	Record superheater pressure drop value from boiler manual.		_____ psi	_____ psi
6	Ensure S/S and S/P lift pressures (from Step 3) are \leq pressures recorded in 6b . <div style="margin-left: 20px;"> 6a. Step 5 (superheater pressure drop) + 5 psi 6b. Step 3a (D/S pressure) – 6a pressure </div>		<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>
<p>IMPORTANT: If Step 3a (S/S and S/P) is NOT \leq 6b, S/S and S/P lift pressures MUST be adjusted.</p>				
7	Determine blowdown and ensure it is between 2% and 4% of lift pressure for each valve. Use the following calculations. <div style="margin-left: 20px;"> 7a. 3a pressure – 3b pressure = blowdown 7b. 3a pressure x .02 (2%) 7c. 3a pressure x .04 (4%) </div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>	<div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div> <div style="margin-left: 20px;">_____ psi</div>
<p>IMPORTANT: If 7a (blowdown) is not between 7b and 7c, blowdown setting MUST be adjusted within specified limits.</p>				
8	After hand-relieving gear is reinstalled, observe each valve as it is hand-relieved from the fireroom or engineroom floor (46 CFR 52.01-120(d)(2)).			

D/S = Drum Safety Valve **S/S** = Superheater Safety Valve **S/P** = Superheater Pilot Valve

- ☐ **Safety valves**
- Relieving gear
 - Escape pipes
 - Drains
- 46 CFR 52.01-120
MSM Vol. IV Ch. 3.I.2.c
46 CFR 56.50-25

Boiler	Date Set and Sealed	Pressure Setting

- ☐ **Superheater safety valves**
- 46 CFR 52.01-120

Boiler	Date Set and Sealed	Pressure Setting

- ☐ **Automation**
- Reduced manning
 - Yes
 - No
 - Approved test procedure
 - Satisfactory test
 - Reviewed logs/records
 - Interviewed personnel
- 46 CFR Part 62
SOLAS 74/78 II-1/46-54
MSM Vol. IV Ch. 3.L
NVIC 1-69
NVIC 7-73
NVIC 6-84
46 CFR 62.50
46 CFR 62.30-10

Notes: _____

- | | | |
|--------------------------|--|---|
| <input type="checkbox"/> | Fusible plugs

Examined

Renewed at this inspection | 46 CFR 52.01-50
46 CFR Table 61.05-10
MSM Vol. IV Ch. 3.I.3.b |
| <input type="checkbox"/> | High pressure steam piping
• Steam piping > 3 inches subject to boiler pressure hydrostatically tested (46 CFR 61.05-10)
• Lagging or insulation
• Hangers or supports | 46 CFR 52.01-105
46 CFR 56.50-15
SOLAS 74/78 II-1/33 |
| <input type="checkbox"/> | Fuel systems
• Service and transfer pumps
• Remote shutoff valves
• Remote cutouts
• Reliefs and bypass valves
• Strainers
• Drip pans
• Torch pots
• Piping
• Heaters | 46 CFR 56.50-65 |
| <input type="checkbox"/> | Feedwater system (including condensate)
• Pumps
• Injectors
• Valves and controls
• Water heaters (including deaerator)
• Water regulators
• Water level indicators
• Grease extractors
• Piping
• Gauges and thermometers
• Air ejectors
• Condensers | 46 CFR 52.01-115

46 CFR 56.50-35
46 CFR 56.50-45

46 CFR 56.50-30 |

Notes: _____

- ☐ Automatic auxiliary boilers
 - Controls and safety devices 46 CFR 63.15-1
 - Fuel systems 46 CFR 63.20
 - Alarms 46 CFR 63.15-3
 - Inspections / test 46 CFR 63.15-7
46 CFR 63.15-9

- ☐ Boiler repairs in accordance with 46 CFR Part 59

- ☐ Low pressure heating boilers 46 CFR 53.01
 - Safety or relief valves 46 CFR 53.05
 - Gauges
 - Thermometers
 - Automatic controls 46 CFR 53.12
 - Bottom blow off
 - Water level indicator
 - Connections
 - Refractory

- ☐ Periodic test and inspection of low pressure heating boilers in accordance with 46 CFR Table 61.05-10

Boiler Number	Date Hydrostatically Tested	Fireside	Waterside	External

Notes: _____

Diesels:

- | | |
|---|---|
| <input type="checkbox"/> Propulsion machinery | 46 CFR 58.05
SOLAS 74/78 II-1/27 |
| <ul style="list-style-type: none">• Safety devices• Foundations• Guards• Controls | |
| <input type="checkbox"/> Main propulsion diesels | 46 CFR 58.05
46 CFR 58.10
SOLAS 74/78 II-1/27 |
| <ul style="list-style-type: none">• Fuel lines• Air starting lines• Exhaust system<ul style="list-style-type: none">– Manifold– Exhaust pipe– Protective devices• Lube oil system<ul style="list-style-type: none">– Coolers– Standby L/O pump• Engine protection<ul style="list-style-type: none">– Remote shutdowns– Overspeed protection– Low lube oil– High temperature– Crank case• Explosion covers | |
| <input type="checkbox"/> Automation | 46 CFR Part 62
SOLAS 74/78 II-1/46-54
MSM Vol. IV Ch. 3.L
NVIC 1-69
NVIC 6-84
46 CFR 62.50 |
| <ul style="list-style-type: none">• Reduced manning<ul style="list-style-type: none">YesNo• Approved test procedure• Satisfactory test• Reviewed logs/records• Interviewed personnel | |

Notes: _____

Pressure Vessels:

- ☐ Pressure vessels hydrostatically tested or internally examined 46 CFR 61.10
MSM Ch. 6.Q
MSM Vol. IV Ch. 3.I.7

Service	MAWP	Date Tested or Examined Internally	Relief Valve Tested
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

- ☐ Relief valves springs set within range 46 CFR 54.15-10(g)

Auxiliary Machinery:

- ☐ Bilge and ballast systems 46 CFR 56.50-50
46 CFR 56.50-55
46 CFR 56.50-57
- Pumps
 - Eductors
 - Emergency bilge pump
 - Manifold, valves, and piping
 - Remote controls (hydraulic, pneumatic, manual, electric)
 - Strainers
 - Sounding and vent piping
 - Markings and indicators
- ☐ Compressed air system 46 CFR 58.30
- Compressor
 - Controls and gauges
 - Relief valves

Notes: _____

- | | |
|---|---|
| <input type="checkbox"/> Lubrication systems | 46 CFR 56.50-80 |
| <ul style="list-style-type: none"> • Pumps • Heat exchangers • Valves and controls • Piping • Gauges, thermometers, and alarms • Tanks, vents, and strainers | |
| <input type="checkbox"/> Refrigeration and air conditioning systems | 46 CFR 58.20 |
| <ul style="list-style-type: none"> • Compressors • Valves and controls • Spare refrigerant stowage • Gas mask (ammonia) with spare charges • Ventilation • Alarms | |
| <input type="checkbox"/> Evaporators | 46 CFR 54.01-10 |
| <ul style="list-style-type: none"> • Pumps • Valves and controls | |
| <input type="checkbox"/> Freshwater systems (potable and domestic) | |
| <ul style="list-style-type: none"> • Pumps • Valves and controls • Sump tanks • Tank pressure • Air cushion supply line | |
| <input type="checkbox"/> Steering gear systems tested | 46 CFR 58.25
46 CFR 61.20
46 CFR 58.25-70
46 CFR 58.25-25
33 CFR 164.34 |
| <ul style="list-style-type: none"> • Motors and pumps • Telemotor or other control • Indicators and alarms • Instructions and markings | |

Electrical Systems:

NOTE: Guidance for inspecting electrical systems is detailed in NVIC 2-89.

- | | |
|---|--|
| <input type="checkbox"/> Ship's service generators | 46 CFR 110.10
46 CFR 111.12
SOLAS 74/78 II-1/41
MSM Ch. 6.L.4.c
MSM Vol. IV Ch. 3.D.2
46 CFR 111.12-1 |
| <ul style="list-style-type: none"> • Protective guards • Reverse power relay • Overspeed trip (> 110% < 115%) • Low oil pressure alarm / shutdown | |

Notes: _____

- | | |
|--|---------------------------------------|
| <input type="checkbox"/> Switchboards (including emergency) | 46 CFR 111.30
MSM Ch. 6.L.4.g |
| <ul style="list-style-type: none"> • Automatic bus transfer • Ground detectors • Personnel safeguards (guards, rails, mats, etc.) • Drip shields • Nameplates • Warning notices posted • Fuse / circuit breaker ratings | MSM Ch. 6.L.5.g |
| <input type="checkbox"/> Panelboards | 46 CFR 111.40 |
| <ul style="list-style-type: none"> • Overcurrent devices • Circuit directory • Locking device | 46 CFR 111.40-11 |
| <input type="checkbox"/> Motor controllers | 46 CFR 111.70
MSM Ch. 6.L.4.i |
| <ul style="list-style-type: none"> • Drip shields • Disconnect switch • Wiring diagram posted • Remote shutdowns tested | |
| <input type="checkbox"/> Ventilation systems | 46 CFR 111.103
SOLAS 74/78 II-1/48 |
| <ul style="list-style-type: none"> • Remote shutdown tested • Cargo fans • Machinery space fans • Accommodation fans | |
| <input type="checkbox"/> Ship's service lighting systems | 46 CFR 111.75
46 CFR 111.40 |
| <ul style="list-style-type: none"> • Panelboards • Circuit directory • Fuses • Circuit breakers • Berth lights • Globes and guards • Explosion-proof or watertight (where required) | |

Notes: _____

- | | |
|--|--|
| <input type="checkbox"/> Emergency generator tested <ul style="list-style-type: none"> • Starting system • Fuel system • Overspeed trip (> 110% < 115%) • Low oil pressure alarm / shutdown • High jacket water temperature alarm • Fixed firefighting system shutdown | 46 CFR 112.25
46 CFR 112.50
SOLAS 74/78 II-1/42-44 |
| <input type="checkbox"/> Emergency batteries tested <ul style="list-style-type: none"> • Protection • Charger • Ventilation | 46 CFR 112.55 |
| <input type="checkbox"/> Adequate emergency power and lighting | 46 CFR 112.43
MSM Ch. 6.N |
| <input type="checkbox"/> Internal communications and control system <ul style="list-style-type: none"> • General alarms • Engine order telegraph <ul style="list-style-type: none"> – Failure alarms • Telephones • Voice tubes • Public address system • Pilothouse controls • Fire detection and alarm systems • Steering gear alarm and indicator | 46 CFR 113.25
46 CFR 113.35
46 CFR 113.30
46 CFR 113.50
46 CFR 113.10
46 CFR 113.43 |
| <input type="checkbox"/> Lifeboat electrical installation <ul style="list-style-type: none"> • Winches and controls tested • Master switch opened • Limit switches opened • Emergency disconnect switch opened | 46 CFR 111.95
MSM Ch. 6.L.5.d |

Notes: _____

<input type="checkbox"/>	General electrical installation	46 CFR 111.01-1 SOLAS 74/78 II-1/40 46 CFR 111.60 MSM Ch. 6.L.5.h 46 CFR 111.60-17 46 CFR 111.60-19 46 CFR 111.05 46 CFR 111.30-11 46 CFR 111.105 MSM Vol. IV Ch. 3.C.2.f MSM Ch. 6.L.5.i
	<ul style="list-style-type: none"> Jury rigs Connection boxes Dead-end cables Splices Grounding Personnel safeguards (guards, rails, etc.) Hazardous locations Portable electrical equipment 	

Firefighting Equipment:

<input type="checkbox"/>	Portable extinguishers (machinery spaces)	46 CFR 34.50 46 CFR 76.50 46 CFR 95.50 SOLAS 74/78 II-2/6 SOLAS 74/78 II-2/21 MSM Ch. 18.I.3 NVIC 7-70 NVIC 13-86
	<ul style="list-style-type: none"> Required number, type, and class Annually serviced Bottles hydrostatically tested (every 5 years) Markings (weight and hydrostatic test date) Spare charges, spare extinguishers 	
<input type="checkbox"/>	Semiportable extinguishers (machinery spaces)	46 CFR 34.50 46 CFR 76.50 46 CFR 95.50 SOLAS 74/78 II-2/6 SOLAS 74/78 II-2/21 MSM Ch. 18.I.4
	<ul style="list-style-type: none"> Required number, type, and class Annually serviced Bottles hydrostatically tested (every 12 years) Controls, instructions, markings Hose and diffuser Flexible loops tested or replaced (same as bottle) 	
<input type="checkbox"/>	Sprinkler system tested	46 CFR 34.30 46 CFR 76.25 46 CFR 95.30 MSM Ch. 18.I.9 NFPA 13-1996
	<ul style="list-style-type: none"> Type Pumps Manifold Controls System diagram posted 	

Notes: _____

- | | |
|--|--|
| <input type="checkbox"/> Fixed fire extinguishing system (machinery spaces) (System servicing is recorded in Hull Inspection 840 Book.) | 46 CFR 34.15
46 CFR 34.17
46 CFR 76.15
46 CFR 76.17
46 CFR 95.05-10
SOLAS 74/78 II-2/11 |
| <ul style="list-style-type: none"> • Piping / flexible loops • Heads • Alarms • Markings | |
| <input type="checkbox"/> Fire main systems and stations (machinery spaces) | 46 CFR 34.10-10
46 CFR 76.10-10
46 CFR 95.10-10 |
| <ul style="list-style-type: none"> • Required number and type, proper threads • Nozzles (combination, etc.) • Applicators • Spanners • Markings | |
| <input type="checkbox"/> Pumps tested | 46 CFR 34.10-5
46 CFR 76.10-5
46 CFR 95.10-5
SOLAS 74/78 II-2/4 |
| <ul style="list-style-type: none"> • Controls and gauges • Relief valves • Markings | |
| <input type="checkbox"/> Paint locker | 46 CFR 34.05-5
46 CFR Table 76.05-1(a)
46 CFR 95.05-10(c)
SOLAS 74/78 II-2/18.7 |

Watertight Integrity:

- | | |
|--|-----------------------------------|
| <input type="checkbox"/> Watertight integrity of machinery spaces | 46 CFR 170.270
MSM Ch. 6.L.5.e |
| <ul style="list-style-type: none"> • Watertight doors • Alarms • Controls • Bulkheads (penetrations) • Markings | |

Notes: _____

Pollution Prevention:

NOTE: Guidance for inspecting pollution prevention items is detailed in MSM Volume II, Chapter 31.

- | | | |
|--------------------------|---|---|
| <input type="checkbox"/> | Oil record book maintained and submitted | 33 CFR 151.25
MARPOL Ax. I/20 |
| <input type="checkbox"/> | Oily water separating equipment | 33 CFR 155.380
MARPOL Ax. I/6
MSM Vol. IV Ch. 3.K.2
MSM Ch. 31.D.11 |
| | <ul style="list-style-type: none">• Approved equipment• Operationally tested• Alarms• Shutdowns | |
| <input type="checkbox"/> | Ballast discharge | 33 CFR 155.330
33 CFR 155.350
33 CFR 155.360
33 CFR 155.370
MSM 31.D.10 |
| | <ul style="list-style-type: none">• Piping system• Outlet• Stop valve• Acceptable processing equipment | |
| <input type="checkbox"/> | Pollution placard posted | 33 CFR 155.450
MSM Ch. 31.D.13 |
| <input type="checkbox"/> | Oily waste retention | MSM Ch. 31.D.7 |
| | <ul style="list-style-type: none">• Bilge• Tank | |

Marine Sanitation Devices:

NOTE: Guidance for inspecting marine sanitation devices is detailed in MSM Volume II, Chapter 18.K.

- | | | |
|--------------------------|---------------------------------|-------------------------------|
| <input type="checkbox"/> | Marine sanitation device | 33 CFR 159.55
MSM Ch. 31.F |
| | Type I | |
| | Type II | |
| | Type III | |
| <input type="checkbox"/> | Certified for inspected vessels | MSM Ch. 31.F.4 |
| <input type="checkbox"/> | Capacity satisfactory | MSM Ch. 18.K.7.d |

Notes: _____

- | | | |
|--------------------------|---|--|
| <input type="checkbox"/> | Installation | 33 CFR 159.57
MSM Vol. IV Ch. 3.K.1 |
| | <ul style="list-style-type: none"> • Operation • Ventilation • Wiring and piping • Maintenance • Placard posted • Safety • Accessibility to parts requiring routine servicing • Manufacturer's instructions available | 33 CFR 159.59 |

Miscellaneous:

- | | | |
|--------------------------|---|--|
| <input type="checkbox"/> | Liquefied petroleum gases for cooking and heating | 46 CFR 61.15-10 |
| | <ul style="list-style-type: none"> • Approved type • Cylinder <ul style="list-style-type: none"> – Test dates – Stowage • Safety relief device • Regulators • Piping and fittings • Location | |
| <input type="checkbox"/> | Tank tops, bilges, cofferdams, and bilge wells | |
| <input type="checkbox"/> | Sea suctions and overboard discharges | MSM Ch. 8.F |
| <input type="checkbox"/> | Nonmetallic expansion joints | 46 CFR 61.15-12
MSM Ch. 8.F.3 |
| | <ul style="list-style-type: none"> • External exam • 10-year service replacement | |
| <input type="checkbox"/> | Means of escape | 46 CFR 32.01-1
46 CFR 72.10-5
46 CFR 92.10-5 |
| | <ul style="list-style-type: none"> • Accessibility • Absence of locks | |

Notes: _____

Section 2: Appendices

Recommended US Vessel Deficiency Procedures:

Step	Action								
1	Identify deficiency.								
2	Inform vessel representative.								
3	Record on the <i>Deficiency Summary Worksheet</i> (next page).								
4	If deficiency is corrected prior to end of inspection, go to Step 7 .								
5	<p>If deficiency is unable to be corrected prior to end of inspection, issue CG-835 in accordance with table below.</p> <table border="1"> <thead> <tr> <th>IF deficiency:</th><th>THEN issue CG-835:</th></tr> </thead> <tbody> <tr> <td> <p>Does NOT immediately impact crew/passenger safety, hull seaworthiness, or the environment, e.g.,</p> <ul style="list-style-type: none"> • Missing placards </td><td> <p>That provides a specific time for correcting deficiency, e.g.,</p> <ul style="list-style-type: none"> • "X" number of days </td></tr> <tr> <td> <p>Allows vessel operations to be MODIFIED to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> • Automation defect </td><td> <p>That restricts operation of vessel to meet current vessel conditions, e.g.,</p> <ul style="list-style-type: none"> • Increased crew </td></tr> <tr> <td> <p>DOES immediately impact crew/passenger safety, hull seaworthiness, or the environment, and cannot be modified to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> • Missing or defective firefighting equipment </td><td> <p>That requires the deficiency to be corrected prior to operating vessel ("NO SAIL" item), e.g.,</p> <ul style="list-style-type: none"> • Prior to carrying passengers • Prior to carrying cargo </td></tr> </tbody> </table>	IF deficiency:	THEN issue CG-835:	<p>Does NOT immediately impact crew/passenger safety, hull seaworthiness, or the environment, e.g.,</p> <ul style="list-style-type: none"> • Missing placards 	<p>That provides a specific time for correcting deficiency, e.g.,</p> <ul style="list-style-type: none"> • "X" number of days 	<p>Allows vessel operations to be MODIFIED to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> • Automation defect 	<p>That restricts operation of vessel to meet current vessel conditions, e.g.,</p> <ul style="list-style-type: none"> • Increased crew 	<p>DOES immediately impact crew/passenger safety, hull seaworthiness, or the environment, and cannot be modified to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> • Missing or defective firefighting equipment 	<p>That requires the deficiency to be corrected prior to operating vessel ("NO SAIL" item), e.g.,</p> <ul style="list-style-type: none"> • Prior to carrying passengers • Prior to carrying cargo
IF deficiency:	THEN issue CG-835:								
<p>Does NOT immediately impact crew/passenger safety, hull seaworthiness, or the environment, e.g.,</p> <ul style="list-style-type: none"> • Missing placards 	<p>That provides a specific time for correcting deficiency, e.g.,</p> <ul style="list-style-type: none"> • "X" number of days 								
<p>Allows vessel operations to be MODIFIED to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> • Automation defect 	<p>That restricts operation of vessel to meet current vessel conditions, e.g.,</p> <ul style="list-style-type: none"> • Increased crew 								
<p>DOES immediately impact crew/passenger safety, hull seaworthiness, or the environment, and cannot be modified to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> • Missing or defective firefighting equipment 	<p>That requires the deficiency to be corrected prior to operating vessel ("NO SAIL" item), e.g.,</p> <ul style="list-style-type: none"> • Prior to carrying passengers • Prior to carrying cargo 								
6	Enter CG-835 data in MIDR.								
7	Enter deficiency data in MSDS.								
8	Initiate Report of Violation (ROV) if necessary.								

Deficiency Summary Worksheet:

Name of Vessel

VIN[illegible]

[illegible]

Deficiencies identified should be listed with MSIS codes. At completion of inspection/examination, any outstanding deficiencies shall be entered in MIDR or PSDR as appropriate. All deficiencies found (outstanding and completed) shall be entered in the Deficiency Summary. Worklist items, which serve only as memory joggers to complete inspection/examination (e.g., test emergency fire pump), should not be coded as deficiencies.

MSIS Codes for Deficiencies:

BS	Ballast	DC	Dry Cargo	IC	I/C Engine
BI	Bilge	ES	Electrical	LS	Lifesaving
BA	Boiler, Aux.	FF	Firefighting	MI	Miscellaneous
BM	Boiler, Main	FL	Fuel	NS	Navigation
CS	Cargo	GS	General Safety	PP	Propulsion
DM	Deck Machinery	HA	Habitation	SS	Steering
DL	Doc., Lics., Pmts.	HU	Hull		

Conversions:

Distance and Energy				
Kilowatts (kW)	X	1.341	=	Horsepower (hp)
Feet (ft)	X	3.281	=	Meters (m)
Long Ton (LT)	X	.98421	=	Metric Ton (t)
Liquid (NOTE: Values are approximate.)				
Liquid	bbl/LT	m ³ /t	bbl/m ³	bbl/t
Freshwater	6.40	1.00	6.29	6.29
Saltwater	6.24	.975	6.13	5.98
Heavy Oil	6.77	1.06	6.66	7.06
DFM	6.60	1.19	7.48	8.91
Lube Oil	7.66	1.20	7.54	9.05
Weight				
1 Long Ton	= 2240 lbs	1 Metric Ton	= 2204 lbs	
1 Short Ton	= 2000 lbs	1 Cubic Foot	= 7.48 gal	
1 Barrel (oil)	= 5.61 ft = 42 gal = 6.29 m ³	1 psi	= .06895 Bar = 2.3106 ft of water	
Temperature: Fahrenheit = Celsius ($^{\circ}\text{F} = 9/5 ^{\circ}\text{C} + 32$ and $^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$)				
0	= -17.8	80	= 26.7	200 = 93.3
32	= 0	90	= 32.2	250 = 121.1
40	= 4.4	100	= 37.8	300 = 148.9
50	= 10.0	110	= 43.3	400 = 204.4
60	= 15.6	120	= 48.9	500 = 260
70	= 21.1	150	= 65.6	1000 = 537.8
Pressure: Bars = Pounds per square inch				
1 Bar	= 14.5 psi	5 Bars	= 72.5 psi	9 Bars = 130.5 psi
2 bars	= 29.0 psi	6 Bars	= 87.0 psi	10 Bars = 145.0 psi
3 Bars	= 43.5 psi	7 Bars	= 101.5 psi	
4 Bars	= 58.0 psi	8 Bars	= 116.0 psi	